

# **Ansible Configuration and Administration (5 Day)**

## **Course Description**

This course presents the system management and configuration tool Ansible, from methods, techniques, capabilities to implementation. Each participant will learn how to configure an Ansible control machine along with the impact on the Linux system. A lot of time and attention will be spent in learning, writing, and applying playbook definitions, the key part of Ansible that allows the synchronization of environments easily and uniformly, to apply to Linux, Unix and Windows systems.

## **Course Objectives**

At the completion of the course, participants should be able to:

- configure Ansible control-node and managed-node(s)
- create and run playbooks
- use standard Ansible modules
- create and implement dynamic inventory definitions
- roles: create, install and access with the Ansible Galaxy
- roles: reusable capabilities and dependencies
- features and usage of the Ansible Tower

## **Target Audience**

This course is directed towards working systems administrators, software developers, application testers, and quality assurance personnel.

## **Implementation**

Each participant will have a dedicated RHEL 7 / 8 virtual server for Ansible installation, playbook development, and DSL features, with an installed Ansible Tower instance. A CentOS 7 / 8 minimal virtual system and a virtualized Windows 10 host will be setup as Ansible managed nodes. A local Git repo will be created to define a role structure, and will be used for local and remote access with Ansible Galaxy.

## **Prerequisites**

It is assumed that participants are working systems administrators / developers / testers with some very basic scripting knowledge (bash, ksh, Perl or Python) and an understanding of fundamental system utilities / commands on Linux and Windows systems

# Course Topics

## Introduction

- software development (cycle) considerations
- strengths and weaknesses of Ansible
- Ansible terminology
- Ansible required environment setup
- additional methods of using credentials (types) with Ansible
- running as root

## Initial Setup and Configuration

- Ansible Core installation methods: **rpm, pip, and Tower**
- Ansible component locations
- Ansible documentation
- Ansible configuration file (locations and parameter definitions)
- inventory (hosts) file contents (Linux and Windows nodes)
- dynamic inventory (hosts) file contents (Linux and Windows nodes)
- (gathering) system facts (methods)
- using system facts
- understanding the hostvars dictionary (usage)
- creating and using local system facts

## Ansible Playbooks

- layout of playbook sections:
  - directives, variable definitions, tasks, handlers, module modifiers
- (all methods of) variable creation and usage
- using modules and modifiers) in playbooks
- controls : loops, conditionals, tags, notifications, plugins, filters, and lookups
- protecting sensitive information with the Ansible Vault
- Jinja 2 template usage

## Ansible Modules

- layout of an Ansible module
- Linux modules : file, yum, systemd, cron, user, shell, filesystem
- using the Windows specific (win\_) modules
- special use Ansible modules
- writing a complete customized module (and embedded documentation)

# Course Topics

## Roles in Ansible

- overview of a role
- creating a role (structure)
- using (a) role(s)
- packaging up a role
- Ansible Galaxy - capabilities and usage with roles
- Git repo (role) repository (creation) on a non-control node
- local access of a Git repo role repository
- remote access of a Git repo role repository
- importing role definitions
- role dependencies definitions and usage

## Managed Nodes

- requirements for a Linux managed node
- inventory and access control information on the control node
- setup of a Linux managed node
- requirements for a Windows managed node
- setup of a Windows managed node

## Ansible Tower

- installation of Ansible Tower (review)
- create inventories with **awx-manage**
- Ansible Tower dynamic inventory
- combining projects with parameter definitions
- comparing manual and SCM projects
- watching and chaining (multi-) playbooks (workflows)
- interfacing with the Ansible Tower API
- installing and using **the tower-cli / awx** utility
- Ansible Core interface modules (to the Ansible Tower)
- backing up the Ansible Tower database
- updating the Ansible Tower
- introduction to Ansible Tower clusters
- Ansible Tower virtualenvs

## Collections in Ansible

- overview of a role
- creating a collection (structure)
- installing a collection with Ansible Galaxy
- using a collection (from a playbook)